

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of Whaley et al.

Serial number: unassigned

Group Art Unit: unassigned

Attorney Docket Number: 01640393aa

Examiner: unassigned

Filed: US national stage filed concurrently herewith

For: ***"GENE ENCODING RESISTANCE TO ACETOLACTATE SYNTHASE-INHIBITING
HERBICIDES"***


SUBMISSION OF SEQUENCE LISTING AND STATEMENT TO SUPPORT FILING IN
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450
Mail Stop SEQUENCE

Dear Sir:

We enclose herein an initial computer readable form (diskette) and a paper copy of the sequence listings for the above-identified US national stage patent application. Also enclosed is a verified statement that the content of the paper and computer readable copies are the same and include no new matter. Applicant respectfully requests amendment of the present application by entry of the Sequence Listing.

Respectfully submitted,


Ruth E. Tyler-Cross
Registration No. 45,922

Whitham, Curtis & Christofferson
11491 Sunset Hills Road; Suite 340
Reston, VA 20190
Tel: 703-787-9400
FAX: 703-787-7557

JC17 Rec'd PCT/PTO 27 JUN 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of Whaley et al.

Serial number: unassigned

Attorney Docket Number: 01640393aa

Filed: US national stage filed concurrently herewith

For: ***"GENE ENCODING RESISTANCE TO ACETOLACTATE SYNTHASE-INHIBITING
HERBICIDES"***

STATEMENT TO SUPPORT FILING AND SUBMISSION IN ACCORDANCE WITH
37 C.F.R. §§ 1.821-1.825

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450
Mail Stop SEQUENCE

Dear Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821 (g), does not include new matter;
2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and
3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by

10/540971

JC17 Rec'd PCT/P10 27 JUN 2005

fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,



Ruth E. Tyler-Cross

Reg. No. 45,922

June 22, 2005
Date

10/540971

JC17 Rec'd PCT/PTO 27 JUN 2005

Sequence listing.ST25.txt
SEQUENCE LISTING

<110> Whaley, Cory M.
Wilson, Henry P.
Westwood, James H.

<120> Gene Encoding Resistance to Acetolactate Synthase-Inhibiting
Herbicides

<130> 01640393aa

<150> US 60/438,801

<151> 2003-01-09

<150> PCTUS04/00363

<151> 2004-01-09

<160> 8

<170> PatentIn version 3.2

<210> 1

<211> 1846

<212> DNA

<213> Amaranthus hybridus

<400> 1

tcatcatctt cttctcaatc acctaaacct aaacctcctt ccgctactat aactcaatca	60
ccttcgtctc tcaccgatga taaacctctt tcttttgttt cccgatttag ccctgaagaa	120
cccagaaaag gttgcgatgt tctcgttgaa gctcttgaa gtgaagggtg taccgatgtt	180
tttgcttacc ctgggtggagc atccatggaa attcatcaag ctcttactcg ttctaataatc	240
attagaaatg ttcttctctg acatgaacaa ggtgggggtt tcgctgctga aggctacgct	300
cgtgctactg gacgcgttg agtttgatt gccacttctg gtccagggtg tactaatctt	360
gtttctggtc ttgctgatgc acttcttgac tcagtccctc ttgtcgccat tactgggcaa	420
gttccccggc gtatgattgg tactgatgct tttcaagaga ctccaattgt tgaggtaact	480
cgatccatta ccaagcataa ttatttggtg ttagatgttg aggatattcc tagaattgtt	540
aaggaagctt tcttttttagc taattctggt agacctggac ctgttttgat tgatattcct	600
aaagatatc agcaacaatt agttgttcct aattgggaac agcccattaa attgggtggg	660
tatctttcta ggttgcctaa acccattat tctgctaag aagagggact tcttgatcaa	720
attgtaagggt tagtgggtga gtctaagaga cctgtgctgt atactggagg tgggtgtttg	780
aattctagtg aagaattgag gaaatttgct gaattgacag gtattccggt ggctagtact	840
ttaatgggggt tgggggcttt cccttgact gatgatttat ctcttcatat gttgggaatg	900
cacgggactg tgtacgcgaa ttacgcggtt gataaggccg atttggtgct tgcttttggg	960
gttaggtttg atgaacgagt gactggtaag ctcgaggcgt ttgctagccg ggctaagatt	1020
gtgcacatcg atatcgattc tgctgaaatc gggaagaata agcaacctca tgtgtcgatt	1080

Sequence listing.ST25.txt

```

tgtggtgatg ttaaagtggc attacagggg ttgaataaga ttttggaatc tagaaaagga 1140
aaggtgaaat tggatttctc taattggagg gaggagttga atgagcagaa aaagaagttt 1200
cctttgagtt ttaagacttt cggggatgca attcctccgc aatacgccat tcaggttcct 1260
gacgagttga cgaagggcga tgcggttgta agtactgggtg ttgggcagca ccaaagtgtg 1320
gctgccaat tctataagta ccgaaatcct cgccaatggc tgacctcggg tggtttgggg 1380
gctatggggg ttggtctacc agctgctatt ggagctgctg ttgctcgacc agatgcgggtg 1440
gtttagagaca ttgatgggga tgggagtttt atcatgaatg ttcaagagtt ggctacgatt 1500
agggtagaga atctcccgtt taaaatcatg ctcttgaaca atcaacattt aggtatgggt 1560
gttcaatggg aagatcgatt ttacaaagct aaccggggcac atacatacct cgggaaatcct 1620
tccaattctt ccgaaatctt cccggatatg ctcaaatttg ctgaagcatg tgatatacca 1680
gcagcccgtg ttaccaaggt gagcgattta agggctgcaa ttcaaacaat gttggatact 1740
ccaggaccgt atctgctgga tgtaatcgta ccacatcagg agcatgtgct gcctatgatc 1800
cctagcgggt ccgccttcaa ggacaccata acagagggtg atggaa 1846

```

<210> 2
 <211> 614
 <212> PRT
 <213> *Amaranthus hybridus*

<400> 2

Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr Ile
 1 5 10 15

Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe Val
 20 25 30

Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu Val
 35 40 45

Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro Gly
 50 55 60

Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile Ile
 65 70 75 80

Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala Glu
 85 90 95

Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr Ser
 100 105 110

Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu Leu
 Page 2

Sequence listing.ST25.txt

115	Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met 130 135 140	120 125
145	Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg 150 155 160	
165	Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile Pro 170 175	
180	Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro Gly 185 190	
195	Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val Val 200 205	
210	Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg Leu 215 220	
225	Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln Ile 230 235 240	
245	Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly Gly 250 255	
260	Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu Thr 265 270	
275	Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro Cys 280 285	
290	Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val Tyr 295 300	
305	Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly Val 310 315 320	
325	Arg Phe Asp Glu Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser Arg 330 335	
340	Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys Asn 345 350	
355	Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu Gln 360 365	

Sequence listing.ST25.txt

Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Lys Val Lys Leu Asp
370 375 380

Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe Pro
385 390 395 400

Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala Ile
405 410 415

Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr Gly
420 425 430

Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg Asn
435 440 445

Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe Gly
450 455 460

Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val Val
465 470 475 480

Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu Leu
485 490 495

Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu Asn
500 505 510

Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr Lys
515 520 525

Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser Glu
530 535 540

Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro Ala
545 550 555 560

Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr Met
565 570 575

Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His Gln
580 585 590

Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp Thr
595 600 605

Ile Thr Glu Gly Asp Gly
610

Sequence listing.ST25.txt

<210> 3
 <211> 1930
 <212> DNA
 <213> Amaranthus hybridus

<400> 3
 tcacatcatctt cttctcaatc acctaaacct aaacctcctt ccgctactat aactcaatca 60
 ccttcgtctc tcaccgatga taaaccctct tcttttgttt cccgatttag ccctgaagaa 120
 cccagaaaag gttgcgatgt tctcgttgaa gctcttgaac gtgaagggtg taccgatggt 180
 tttgcttacc ctggtggagc atccatggaa attcatcaag ctcttactcg ttctaataatc 240
 attagaaatg ttcttcctcg acatgaacaa ggtgggggtt tcgctgctga aggctacgct 300
 cgtgctactg gacgcgttgg agtttgtatt gccacttctg gtccagggtg tactaatctt 360
 gtttctggtc ttgctgatgc acttcttgac tcagtccctc ttgtcgccat tactgggcaa 420
 gttccccggc gtatgattgg tactgatgct tttcaagaga ctccaattgt tgaggtaact 480
 cgatccatta ccaagcataa ttatttgggtg ttagatgttg aggatattcc tagaattggt 540
 aaggaagctt tctttttagc taattctggt agacctggac ctgttttgat tgatattcct 600
 aaagatattc agcaacaatt agttgttcct aattgggaac agcccattaa attgggtggg 660
 tatctttcta ggttgcctaa acccacttat tctgctaata aagagggact tcttgatcaa 720
 attgtaagggt tagtgggtga gtctaagaga cctgtgctgt atactggagg tgggtgtttg 780
 aattctagtg aagaattgag gaaatttgtc gaattgacag gtattccggt ggctagtact 840
 ttaatggggt tgggggcttt cccttgact gatgatttat ctcttcatat gttgggaatg 900
 cacgggactg tgtacgcgaa ttacgcggtt gataaggccg atttgttgct tgcttttggg 960
 gttaggtttg atgatcgagt gactggtaag ctcgaggcgt ttgctagccg ggctaagatt 1020
 gtgcacatcg atatcgattc tgctgaaatc gggaagaata agcaacctca tgtgtcgatt 1080
 tgtggtgatg ttaaagtggc attacagggg ttgaataaga ttttggaatc tagaaaagga 1140
 aagggtgaaat tggatttctc taattggagg gaggagtga atgagcagaa aaagaagttt 1200
 cctttgagtt ttaagacttt cggggatgca attcctccgc aatacgccat tcaggttctt 1260
 gacgagttga cgaagggcga tgcggttgta agtactggtg ttgggcagca ccaaagtgg 1320
 gctgccaat tctataagta ccgaaatcct cgccaatggc tgacctcggg tggtttggg 1380
 gctatggggt ttggtctacc agctgctatt ggagctgctg ttgctcgacc agatgcggtg 1440
 gttgtagaca ttgatgggga tgggagtttt atcatgaatg ttcaagagtt ggctacgatt 1500
 agggtagaga atctcccggt taaaatcatg ctcttgaaca atcaacattt aggtatggtt 1560
 gttcaatggg aagatcgatt ttacaaagct aaccgggcac atacatacct cggaatcct 1620
 tccaattctt ccgaaatctt cccgatatg ctcaaatttg ctgaagcatg tgatatacca 1680

Sequence listing.ST25.txt

gcagcccgtg ttaccaaggt gagcgattta agggctgcaa ttcaaacaat gttggatact 1740
ccaggaccgt atctgctgga tgtaatcgta ccacatcagg agcatgtgct gcctatgatc 1800
cctagcgggtg ccgccttcaa ggacaccata acagaggggtg atggaagaag ggcttattag 1860
ttggttgagg atctttatag aggagaagct tttttgtatg tatgttagta gttccataaa 1920
cttctatatt 1930

<210> 4
<211> 619
<212> PRT
<213> *Amaranthus hybridus*

<400> 4

Ser Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr
1 5 10 15

Ile Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe
20 25 30

Val Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu
35 40 45

Val Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro
50 55 60

Gly Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile
65 70 75 80

Ile Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala
85 90 95

Glu Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr
100 105 110

Ser Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu
115 120 125

Asp Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg
130 135 140

Met Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr
145 150 155 160

Arg Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile
165 170 175

Pro Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro
Page 6

Sequence listing.ST25.txt

180

185

190

Gly Pro Val₁₉₅ Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val₂₀₅

Val₂₁₀ Pro Asn Trp Glu Gln₂₁₅ Pro Ile Lys Leu Gly Gly₂₂₀ Tyr Leu Ser Arg

Leu₂₂₅ Pro Lys Pro Thr Tyr₂₃₀ Ser Ala Asn Glu Glu₂₃₅ Gly Leu Leu Asp Gln₂₄₀

Ile Val Arg Leu Val₂₄₅ Gly Glu Ser Lys Arg₂₅₀ Pro Val Leu Tyr Thr₂₅₅ Gly

Gly Gly Cys Leu₂₆₀ Asn Ser Ser Glu Glu₂₆₅ Leu Arg Lys Phe Val₂₇₀ Glu Leu

Thr Gly Ile₂₇₅ Pro Val Ala Ser Thr₂₈₀ Leu Met Gly Leu Gly₂₈₅ Ala Phe Pro

Cys Thr₂₉₀ Asp Asp Leu Ser Leu₂₉₅ His Met Leu Gly Met₃₀₀ His Gly Thr Val

Tyr₃₀₅ Ala Asn Tyr Ala Val₃₁₀ Asp Lys Ala Asp Leu₃₁₅ Leu Leu Ala Phe Gly₃₂₀

Val Arg Phe Asp Asp₃₂₅ Arg Val Thr Gly Lys₃₃₀ Leu Glu Ala Phe Ala₃₃₅ Ser

Arg Ala Lys Ile₃₄₀ Val His Ile Asp Ile₃₄₅ Asp Ser Ala Glu Ile₃₅₀ Gly Lys

Asn Lys Gln₃₅₅ Pro His Val Ser Ile₃₆₀ Cys Gly Asp Val Lys₃₆₅ Val Ala Leu

Gln Gly₃₇₀ Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly₃₈₀ Lys Val Lys Leu

Asp₃₈₅ Phe Ser Asn Trp Arg₃₉₀ Glu Glu Leu Asn Glu₃₉₅ Gln Lys Lys Lys Phe₄₀₀

Pro Leu Ser Phe Lys₄₀₅ Thr Phe Gly Asp Ala₄₁₀ Ile Pro Pro Gln Tyr Ala₄₁₅

Ile Gln Val Leu Asp Glu Leu Thr Lys₄₂₅ Gly Asp Ala Val Val₄₃₀ Ser Thr

Sequence listing.ST25.txt

Gly Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg
435 440 445

Asn Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe
450 455 460

Gly Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val
465 470 475 480

Val Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu
485 490 495

Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu
500 505 510

Asn Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr
515 520 525

Lys Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser
530 535 540

Glu Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro
545 550 555 560

Ala Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr
565 570 575

Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His
580 585 590

Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp
595 600 605

Thr Ile Thr Glu Gly Asp Gly Arg Arg Ala Tyr
610 615

<210> 5
<211> 11
<212> PRT
<213> Amaranthus hybridus

<400> 5

Gly Val Arg Phe Asp Glu Arg Val Thr Gly Lys
1 5 10

<210> 6
<211> 11
<212> PRT
<213> Amaranthus hybridus

Sequence listing.ST25.txt

<400> 6

Gly Val Arg Phe Asp Asp Arg Val Thr Gly Lys
1 5 10

<210> 7

<211> 618

<212> PRT

<213> Amaranthus hybridus

<400> 7

Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr Ile
1 5 10 15

Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe Val
20 25 30

Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu Val
35 40 45

Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro Gly
50 55 60

Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile Ile
65 70 75 80

Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala Glu
85 90 95

Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr Ser
100 105 110

Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu Leu
115 120 125

Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met
130 135 140

Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg
145 150 155 160

Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile Pro
165 170 175

Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro Gly
180 185 190

Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val Val
Page 9

Sequence listing.ST25.txt

```

195                                     200                                     205
Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg Leu
  210                               215                               220

Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln Ile
  225                               230                               235                               240

Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly Gly
          245                               250                               255

Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu Thr
          260                               265                               270

Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro Cys
          275                               280                               285

Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val Tyr
          290                               295                               300

Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly Val
  305                               310                               315                               320

Arg Phe Asp Glu Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser Arg
          325                               330                               335

Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys Asn
          340                               345                               350

Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu Gln
          355                               360                               365

Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Lys Val Lys Leu Asp
          370                               375                               380

Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe Pro
  385                               390                               395                               400

Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala Ile
          405                               410                               415

Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr Gly
          420                               425                               430

Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg Asn
          435                               440                               445

```

Sequence listing.ST25.txt

Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe Gly
450 455 460

Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val Val
465 470 475 480

Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu Leu
485 490 495

Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu Asn
500 505 510

Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr Lys
515 520 525

Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser Glu
530 535 540

Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro Ala
545 550 555 560

Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr Met
565 570 575

Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His Gln
580 585 590

Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp Thr
595 600 605

Ile Thr Glu Gly Asp Gly Arg Arg Ala Tyr
610 615

<210> 8

<211> 618

<212> PRT

<213> Amaranthus hybridus

<400> 8

Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr Ile
1 5 10 15

Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe Val
20 25 30

Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu Val
35 40 45

Sequence listing.ST25.txt

Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro Gly
50 55 60

Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile Ile
65 70 75 80

Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala Glu
85 90 95

Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr Ser
100 105 110

Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu Asp
115 120 125

Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met
130 135 140

Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg
145 150 155 160

Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile Pro
165 170 175

Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro Gly
180 185 190

Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val Val
195 200 205

Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg Leu
210 215 220

Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln Ile
225 230 235 240

Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly Gly
245 250 255

Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu Thr
260 265 270

Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro Cys
275 280 285

Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val Tyr
290 295 300

Sequence listing.ST25.txt

Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly Val
305 310 315 320

Arg Phe Asp Asp Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser Arg
325 330 335

Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys Asn
340 345 350

Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu Gln
355 360 365

Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Lys Val Lys Leu Asp
370 375 380

Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe Pro
385 390 395 400

Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala Ile
405 410 415

Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr Gly
420 425 430

Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg Asn
435 440 445

Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe Gly
450 455 460

Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val Val
465 470 475 480

Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu Leu
485 490 495

Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu Asn
500 505 510

Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr Lys
515 520 525

Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser Glu
530 535 540

Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro Ala
545 550 555 560

Sequence listing.ST25.txt

Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr Met
565 570 575

Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His Gln
580 585 590

Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp Thr
595 600 605

Ile Thr Glu Gly Asp Gly Arg Arg Ala Tyr
610 615